

REMARKS

I. Summary of the Office Action

Claims 1-30 are pending in this application.

Claim 7 is objected to for containing informalities.

Claims 22 and 23 are objected to under 37 C.F.R.

§ 1.75(c) for failing to further limit the subject matter of a previous claim.

Claims 1, 2, and 12 are rejected under 35 U.S.C. § 102(e) as being anticipated by Caresosa et al. U.S. Patent No. 6,864,752 (hereinafter "Caresosa").

Claims 3-5, 11, 29, and 30 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa.

Claims 8-10, 14-16, 19, and 21 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Liang et al. U.S. Patent No. 5,550,515 (hereinafter "Liang").

Claim 20 is rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Liang and further in view of Nishimura et al. U.S. Patent No. 6,542,038 (hereinafter "Nishimura").

Claims 24-27 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Liang and further in

view of Griesshaber U.S. Patent No. 5,212,723 (hereinafter "Griesshaber").

Claims 13 and 28 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Young et al. U.S. Patent No. 6,081,141 (hereinafter "Young").

II. Summary of Applicants' Reply

Applicants are filing a Supplemental Information Disclosure Statement concurrently herewith.

Applicants note with appreciation the Examiner's indication of allowable subject matter in claims 6, 7, 17, and 18.

Applicants have canceled claims 8-10, 22 and 23 without prejudice. Applicants have amended independent claims 1, 11, 12, and 14 to more particularly define the invention. No new matter has been introduced as a result of these amendments.

The Examiner's objections and rejections are respectfully traversed.

III. Applicants' Reply to the Objections

A. Claim 7

Claim 7 is objected to for containing informalities. In particular, the Examiner contends that claim 7 should depend from claim 6. Applicant has amended claim 7 to refer to claim 6. This objection should therefore be withdrawn.

B. Claims 22 and 23

Claims 22 and 23 are objected to under 37 C.F.R. § 1.75(c) for failing to further limit the subject matter of a previous claim. Applicants have canceled claim 22 and 23 without prejudice. This objection is moot and should therefore be withdrawn.

IV. Summary of Applicants' Reply to the § 102 Rejection

Claims 1, 2, and 12 are rejected under 35 U.S.C. § 102(e) as being anticipated by Caresosa. This rejection is respectfully traversed.

A. Claims 1 and 2

Applicants' invention, as defined by amended independent claim 1, is directed towards a method of concurrently generating a plurality of clock signals derived from a reference signal. In particular, a plurality of signals

are produced having the same frequency and a different phase. The frequency of the produced signals are divided to produce output signals having a frequency and phase.

Caresosa discusses a clock multiplier unit that synchronizes a reference clock signal to a signal with any one of a plurality of frequencies.

Applicants submit that Caresosa fails to show or suggest producing a plurality of signals each having the same frequency and a different phase, as required by amended independent claim 1. In particular, Caresosa discusses using a plurality of voltage-controlled oscillators to produce a plurality of signals having different frequencies. For example, FIG. 3 of Caresosa shows four voltage-controlled oscillators that produce four signals of different frequencies. On the other hand, amended independent claim 1 specifies that the plurality of signals have the same frequency and different phases. For example, applicants' FIG. 2 shows VCO 226 that produces k1 signals having the same frequency, but different phases (see also applicants' specification, page 8, lines 21-24).

For at least this reason, amended independent claim 1 is allowable over Caresosa. Claim 2, which depends from

amended independent claim 1, is allowable at least because it depends from an allowable claim. This rejection should therefore be withdrawn.

B. Claim 12

Applicants' invention, as defined by amended independent claim 12, is directed towards a method for providing multiple clock signals based on a reference signal. A first plurality of clock signals are generated in response to receiving a reference signal having the same frequency and different phases. A second plurality of clock signals are generated each having a phase and a selectable frequency and are made available to clocking applications.

Applicants submit that Caresosa fails to show or suggest generating a first plurality of clock signals each having the same frequency and a different phase, as required by amended independent claim 12. In particular, Caresosa discusses using a plurality of voltage-controlled oscillators to produce a plurality of signals having different frequencies. For example; FIG. 3 of Caresosa shows four voltage-controlled oscillators that produce four signals of different frequencies. On the other hand, amended independent claim 12 specifies that the plurality of signals have the same frequency and different

phases. For example, applicants' FIG. 2 shows VCO 226 that produces k1 signals having the same frequency, but different phases (see also applicants' specification, page 8, lines 21-24).

For at least this reason, amended independent claim 12 is allowable over Caresosa. This rejection should therefore be withdrawn.

V. Summary of Applicants' Reply to the § 103 Rejections

A. Claims 3-5, 11, 29, and 30

Claims 3-5, 11, 29, and 30 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa. This rejection is respectfully traversed.

1. Claims 3-5

Claims 3-5 are allowable at least because they depend from amended independent claim 1, which has been shown to be allowable. The rejection of claims 3-5 should therefore be withdrawn.

2. Claim 11

Applicants' invention, as defined by amended independent claim 11, is directed towards a method for converting an input clock signal to a plurality of output clock

signals. The input clock signal having an input frequency is modified to produce a first signal having a first frequency. The first signal is phase-shifted to produce a plurality of second signals each having different phases. The second signals are modified to produce an output signal having an individually selectable output frequency.

Applicants submit that Caresosa fails to show or suggest phase-shifting a first signal to produce a plurality of second signals each having a phase different than the phase of the others of said second signals, as required by amended independent claim 11. At best, Caresosa discusses using phase detector 305 to adjust the phases of four VCO output signals so that a feedback signal (fbck) that is based on one of the four VCO output signals is in phase with a reference signal (refclk_cmu). None of the four VCO output signals are phase-shifted to produce a plurality of signals each having different phases.

For at least this reason, amended independent claim 11 is allowable over Caresosa. The rejection of claim 11 should therefore be withdrawn.

3. Claims 29 and 30

Applicants' invention, as defined by independent claim 29, is directed towards a phase-locked loop circuit that phase-shifts a received signal to produce a plurality of phase-shifted signals. The frequency of at least a subplurality of the phase-shifted signals are modified. The frequency-modified signals are selectively applied to any one of several clocking networks.

Applicants submit that Caresosa fails to show or suggest means for phase-shifting a received signal to produce a plurality of phase-shifted signals, as required by independent claim 29. At best, Caresosa discusses using phase detector 305 to adjust the phases of four VCO output signals so that a feedback signal (fbck) that is based on one of the four VCO output signals is in phase with a reference signal (refclk_cmu). None of the four VCO output signals are phase-shifted to produce a plurality of signals each having different phases.

For at least this reason, independent claim 29 is allowable over Caresosa. Claim 30, which depends from independent claim 29, is allowable at least because it depends

from an allowable claim. The rejection of claims 29 and 30 should therefore be withdrawn.

B. Claims 8-10, 14-16, 19, and 21

Claims 8-10, 14-16, 19, and 21 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Liang. This rejection is respectfully traversed.

1. Claims 8-10

Claims 8-10 have been canceled without prejudice. The rejection of claims 8-10 is moot and should therefore be withdrawn.

2. Claims 14-16, 19, and 21

Applicants' invention, as defined by independent claim 14, is directed towards a circuit that outputs a plurality of clock signals having programmable phases and frequencies.

Liang discusses a phased-locked loop circuit in which the output signal is effectively sampled at an increased rate from conventional phase-locked loops.

Applicants submit that Caresosa and Liang fail to show or suggest programmably outputting each received phase-selected and frequency-divided signal to signal conductors, as required by amended independent claim 14.

In particular, applicants submit that Caresosa does not discuss outputting clock signals having selectable phases. At best, Caresosa discusses outputting clock signals having selectable frequencies.

Applicants submit that Liang also does not discuss outputting clock signals having selectable phases. In particular, Liang discusses a phase-locked loop (PLL) circuit that outputs a signal that is in phase with a reference signal. Although Liang discusses a preliminary PLL within the PLL circuit that produces four out-of-phase signals, these signals are not output by the PLL circuit. Instead, these four out-of-phase signals are used internally by the PLL circuit to "provide phase correction opportunities more often than once for each cycle of the input signal" (Liang, column 2, lines 27-29). Therefore, Liang does not discuss programmably outputting phase-selected and frequency-divided signals to signal conductors, as required by independent claim 14.

For at least this reason, independent claim 14 is allowable. Claims 15, 16, 19, and 21, which depend from independent claim 14, are allowable at least because they depend from an allowable claim. The rejection of claims 14-16, 19, and 21 should therefore be withdrawn.

C. Claim 20

Claim 20 is rejected under rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Liang and further in view of Nishimura. Claim 20 depends from independent claim 14, which applicants have shown to be allowable. Accordingly, claim 20 is also allowable. The rejection of claim 20 should therefore be withdrawn.

D. Claims 24-27

Claims 24-27 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Liang and further in view of Griesshaber. Claims 24-27 depend from independent claim 14, which applicants have shown to be allowable. Accordingly, claims 24-27 are also allowable. The rejection of claims 24-27 should therefore be withdrawn.

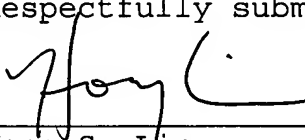
E. Claims 13 and 28

Claims 13 and 28 are rejected under 35 U.S.C. § 103(a) as being obvious from Caresosa in view of Young. Claims 13 and 28 depend from independent claim 12, which applicants have shown to be allowable. Accordingly, claims 13 and 28 are also allowable. The rejection of claims 13 and 28 should therefore be withdrawn.

VI. Conclusion

In view of the foregoing, claims 1-7, 11-21, and 24-30 are allowable. This application is therefore in condition for allowance. Reconsideration and allowance of this application are respectfully requested.

Respectfully submitted,



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